

**REMARKS**

The final Office Action dated February 8, 2006, has been received and reviewed.

Claims 1-12 and 14, are currently pending and under consideration in the above-referenced application, each standing rejected.

Reconsideration of the above-referenced application is respectfully requested.

**Rejections under 35 U.S.C. § 103(a)**

Claims 1-12 and 14 have been rejected under 35 U.S.C. § 103(a) for being drawn to subject matter that is allegedly unpatentable over the art discussed in the "BACKGROUND" section of the above-referenced application.

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Independent claim 1, as proposed to be amended, is drawn to a semiconductor device structure that includes a layer comprising silicon nitride with, on average, less than 1.23 in-film particles or surface roughness features per square millimeter of surface area.

Independent claim 8, as proposed to be amended, recites a semiconductor device structure that includes a layer that comprises silicon nitride and that includes, on average, less than 1.23 in-film particles or surface roughness features of at least 120 nm size per square millimeter of surface area.

The phrase “on average” in independent claims 1 and 8 should not be confused with the term “about,” which does not appear in either independent claim 1 or independent claim 8 in reference to the number of in-film particles or surface roughness features. As used in independent claims 1 and 8, the phrase “on average” clearly indicates a number of in-film particles or surface roughness features per square millimeter of a layer of a semiconductor device structure, which number is determined by counting all of the in-film particles or surface roughness features of the entire layer, then dividing that number by the area of the layer, in square millimeters. Thus, the total number of in-film particles or surface roughness features of the layer and the number of in-film particles or surface roughness features per square millimeter of the layer are very distinct numbers.

There are at least two reasons that a *prima facie* case of obviousness has not been established against any of claims 1-12 or 14.

As an initial matter, the Office has not demonstrated that the art described in the BACKGROUND section of the above-referenced application meets the requirements of any subsection of 35 U.S.C. § 102, which defines when art is “prior art” and, thus, whether the disclosed art can even be relied upon in rejecting the claims of the above-referenced application.

Moreover, it is respectfully submitted that, without the benefit of hindsight provided by the disclosure of the above-referenced application, one of ordinary skill in the art wouldn’t have been motivated to modify teachings of the purported prior art in such a way as to render obvious the subject matter recited in claims 1-12 and 14. In particular, all of the claim rejections that remain in the above-referenced application are based entirely upon the disclosure of the above-referenced application—thus, the hindsight provided by the above-referenced application is apparently the sole (and improper) basis for the rejections of claims 1-12 and 14.

In any event, the BACKGROUND section of the above-referenced application does not teach or suggest each and every element of any of claims 1-12 or 14. It has been asserted that the BACKGROUND section of the above-referenced application includes an admission that prior art semiconductor device structures include silicon-nitride-comprising layers with, on average, less than 1¼ in-film particles or surface roughness per square millimeter. Specifically, the BACKGROUND section of the above-referenced application teaches that silicon nitride layers

that had been formed over so-called “DARC” films had “an incidence of about 40,000 or more” in-film particles “per eight inch semiconductor wafer. On average, this is equal to at least 1.23 or more in-film particles per square millimeter.

As the opinions that have been cited in the final Office Action indicate, the term “about,” in contrast, is not very distinct. Nonetheless, these opinions are totally irrelevant to the subject matter recited in the claims, as neither independent claim 1 nor independent claim 8 recites a layer that comprises silicon nitride and that includes *about* 1.23 (or, for that matter 1¼) in-film particles or surface roughness features per square millimeter.

Since the BACKGROUND section of the above-referenced application clearly does not teach or suggest that a semiconductor device structure may include less than 1.23 in-film particles or surface roughness features per square millimeter, it is respectfully submitted that, under 35 U.S.C. § 103(a), the subject matter recited in amended independent claim 1 and amended independent claim 8 is allowable over the devices that have been discussed in the BACKGROUND section.

Claims 2-7 are each allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Claim 5 is additionally allowable because the purportedly admitted prior art does not teach or suggest that the surface of a layer that comprises anti-reflective material may be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating (“DARC”) film 42. Further, paragraph [0009] of the above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Each of claims 9-12 and 14 is allowable, among other reasons, for depending directly or indirectly from claim 8, which is allowable.

Claim 11 is further allowable since the purportedly admitted prior art does not include any teaching or suggestion that the surface of a layer that comprises anti-reflective material may

be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating ("DARC") film 42. Further, paragraph [0009] of the above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1-12 and 14 is respectfully requested.

#### **Entry of Amendments**

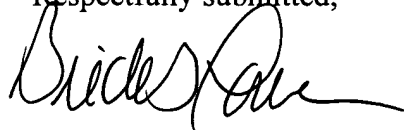
Entry of the proposed amendments to independent claims 1 and 8 is respectfully requested. It is respectfully submitted that the proposed amendments to independent claims 1 and 8 do not introduce new matter into the above-referenced application, nor would entry thereof necessitate an additional search.

In the event that a decision is made not to enter the proposed claim amendments, entry thereof upon the filing of a Notice of Appeal in the above-referenced application is respectfully requested.

**CONCLUSION**

It is respectfully submitted that each of claims 1-12 and 14 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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